REMARKS

I. STATUS OF THE APPLICATION

Claims 1 – 20 were filed in the original application. In the Amendment and Response to the Restriction Requirement mailed September 11, 2006 claims 1 – 11 were cancelled, and claim 20 was amended. In the present Amendment and Response to the Office Action mailed December 29, 2006, claims 12 and 16 are amended.

In the Notice of Non-Compliant Amendment mailed October 15, 2007, the Examiner notes:

> "the amendment to the claims does not reflect all the changes made (see claim 16). Applicant is requested to review the claim amendment and supply claims that accurately reflect all changes made." (Office communication of October 15, 2007, page 3).

Accordingly, in the present Amendment and Response to Office communication of October 15, 2007 and Amendment and Response to Office Action of mailed December 26, 2007, claim 16 is supplied that accurately reflects the changes made.

The Applicants note that all amendments of claims are made without acquiescing to any of the Examiner's arguments or rejections, and solely for the purpose of expediting the patent application process in a manner consistent with the PTO's Patent Business Goals (PBG),[1] and without waiving the right to prosecute the amended claims (or similar claims) in the future. Therefore, claims 1 – 20 are pending.

In the Office Action of December 29, 2006 the Examiner has made 1 objection and 6 rejections. The currently pending objections and rejections are:

1 65 Fed. Reg. 54603 (Sept. 8, 2000).

1. The amendment filed 8/23/2004 is objected to under 35 U.S.C. 132(a) because it allegedly introduces new matter into the disclosure.
2. Claims 12 – 16 and 20 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement.
3. Claims 12 – 16 and 20 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement.
4. Claims 16 and 20 are rejected under 35 U.S.C., 112 second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 12 – 16 and 20 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Zhang I (Zhang et al: Blood, vol 100, No.11, abstract 1; November 2002) (hereinafter "Zhang").
6. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Genbank Accession number NM_139279 (May 31, 2002) (hereinafter "Genbank").
7. Claims 12, 13, 15 and 20 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Genbank in view of Echelard (Echelard et al; 6,210,736) (hereinafter "Echerlard").

II. STATUS OF THE OBJECTION

In the Office Action of December 29, 2006 the Examiner notes:

"The added material which is not supported by the original disclosure is as follows: the preliminary amendment filed 8/23/2004 added SEQ ID NOS to the specification which do not appear to have support in the original disclosure." (Office Action of December 29, 2006, page 2).

The Applicants respectfully submit that the Preliminary Amendment adds no new matter. To the contrary, the Preliminary Amendment presents the nucleotide variations of Table 1. in the context of their associated wild-type MCFD2 nucleic acid sequences.

The Specification as originally filed includes the full -length MCFD2 DNA and amino acid wild-type sequences, together with Table 1. showing specific nucleotide variations, and their locations. Table 1. also includes Nucleic Acid and Amino Acid SEQ ID Nos that are each found in the Preliminary Amendment. Thus, the SEQ ID Nos in the preliminary amendment each show full-length MCFD2 DNA sequences with the respective variations indicated in Table 1., and the consequent amino acid sequence of the corresponding Amino Acid SEQ ID No. Because the ordinary artisan would properly interpret Table 1. in view of the wild-type nucleic acid and amino acid sequences disclosed in the originally filed Specification to arrive at the nucleic acid and amino acid sequences of the preliminary amendment, the preliminary amendment does not add new matter *i.e.*, one skilled in the art would clearly recognize that the subject matter of the preliminary amendment is not "new matter".

In view of the above, the Applicants respectfully request that this objection be withdrawn.

III. STATUS OF THE REJECTIONS

A. Claims 12 – 16 and 20 Comply with the Enablement Requirement

1. In the Office Action of December 29, 2006 the Examiner argues:

> "In the instant case , the claims do not bear a reasonable correlation to the scope of enablement because the specification teaches 7 mutations within the significantly larger MCFD2 gene which are associated with F5F8D." (Office Action of December 29, 2006, page 9).

The Applicants respectfully submit that the Specification fully enables the claims. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 12 to read "providing a biological sample from a subject suspected of having combined factor 5 and factor 8 deficiency". The Applicants assert that the

amendment adds no new matter and that support for the amendments may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

2. In the Office Action of December 29, 2006 the Examiner argues:

> "Additionally, the claims broadly encompass detection of variant polypeptides using differential antibody binding. Although the specification teaches that antibodies were generated against full-length his-tagged MCFD2, the specification does not teach any antibodies which were able to specifically bind to any of the variant MCFD2 polypeptides." (Office Action of December 29, 2006, page 6).

The Applicants respectfully disagree with the Examiner's characterization of the Specification. To the contrary, the Specification is fully enabling for constructing the antibodies of the presently claimed invention, and for their use in detection. See, for example, page 56, line 15 – page 67, line 14, and page 60, line 21 - page 63, line 26.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

3. In the Office Action of December 29, 2006 the Examiner argues:

> "The specification does not provide a predictable means for identifying additional variants of the MCFD2 gene, in any animal, which are correlated with or indicative of F5F8D, as is broadly encompassed by the claims." (Office Action of December 29, 2006, page 8).

The Applicants respectfully submit that the Specification fully enables the claims. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have

amended claim 12 to read "human" instead of "animal". The Applicants assert that the amendments add no new matter and that support for the amendments may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

B. Claims 12 – 16 and 20 Comply with the Written Description Requirement

1. In the Office Action of December 29, 2006 the Examiner argues:

> "The claims further encompass methods of detecting variant MCFD2 polypeptides or nucleic acids in any subject, such as any animal, which includes, for example, any mammal, such as dog, cat, mouse, rat, horse, etc. . . . The specification does not teach gene or polypeptide sequence of MCFD2 in any other animal, nor does it teach any MCFD2 variants from other species." (Office Action of December 29, 2006, page 10.)

The Applicants respectfully submit that the Specification provides ample written description of the claims. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 12 to read "human" instead of "animal". The Applicants submit that the amendment adds no new matter and that support for the amendment may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

2. In the Office Action of December 29, 2006 the Examiner argues:

> "The recitation of "associated" appears to broadly encompass not only specific nucleic acid mutations which encode for amino acid changes the MCFD2 protein, but also to nucleotide variants which do not encode amino acid changes but may

be found in the same sequence, for example, in a haplotype, with a particular nucleotide variant encoding a variant MCFD2 polypeptide. The specification has been thoroughly reviewed but does not appear to provide support for the latter concept." (Office Action of Decmeber 29, 2006, page 13).

The Applicants respectfully disagree with the Examiner's characterization of the Specification. To the contrary, the Specification provides ample written description of the claims. See, for example:

> ""Forty-five markers (22 from the Genethon and Marshfield comprehensive genetic maps and 23 designed from sequence-repeat information available at the Human Genome Project working draft) were used for haplotype analysis, with nine markers shown here." (Specification, page 5, lines 3 – 7).

In view of the above, the Applicants respectfully request that this objection be withdrawn.

C. Claims 16 and 20 are Definite

1. In the Office Action of December 29, 2006 the Examiner argues:

> Claim 16 recites the term "young" in reference to an animal. However, the term is indefinite because neither the claim nor the specification provide any guidance to ascertain the metes and bounds of the term." (Office Action of December 29, 2006, page 14).

The Applicants respectfully submit that the claims are definite. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 16 to read "The method of claim 12, wherein said subject is selected from the group consisting of a human embryo, fetus, newborn, infant, child, and adult." The

Applicants assert that the amendment adds no new matter and that support for the amendments may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

2. In the Office Action of December 29, 2006 the Examiner argues:

> "The recitation of "associated" is indefinite as it is unclear if the term is limited to nucleotide variations which specifically encode amino acid changes, or whether the term is intended to more broadly encompass any variant in a nucleotide sequence which can also be found in a nucleotide sequence which encodes a variant polypeptide, for example a single nucleotide polymorphism which occurs in a haplotype including nucleotide variants that encode a specific amino acid changes." (Office Action of December 29, 2006, page 14.)

The Applicants respectfully disagree with the Examiner's characterization of claim 20. Claim 20 is dependent upon claim 12, and thereby incorporates claim 12's limitations including, for example, a biological sample from a subject suspected of having combined factor 5 and factor 8 deficiency. Thus, a variant MCFD2 nucleic acid sequence is associated with a variant MCFD2 polypeptide wherein it is detected in a sample from a subject suspected of having combined factor 5 and factor 8 deficiency.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

D. Claims 12 –1 6 and 20 are not Anticipated by Zhang

In the Office Action of December 29, 2006 the Examiner argues:

> "Claims 12 – 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang I (Zhang et al: Blood, vol 100, No.11, abstract 1; November 2002).

> Zhang I teaches detecting variant MCFD2 (CFD2) polypeptides and nucleic acids in a sample form patients with F5F8D." (Office Action of December 29, 2006, page 15).

The Applicants respectfully disagree. Zhang, a manuscript of the Applicants, is not a 102(b) reference because it was not published more than one year before the Applicants' priority date.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

E. Genbank does not Render the Claims Obvious

In the Office Action of December 29, 2006 the Examiner argues:

> "Genbank Accession number NM_129279 teaches the sequence of SDNSF from humans, which encodes an enzyme which is identical to SEQ ID NO: 2, and therefore detects the "absence" of the variant polypeptide." (Office Action of December 29, 2006, page 16).

The Applicants respectfully submit that the claims are non-obvious. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 12 to read "detecting the presence of a variant MCFD2 polypeptide in said biological sample." Genbank does not teach or suggest detecting the presence of a variant MCFD2 polypeptide in a biological sample, nor does Genbank provide any suggestion that any particular mutation correlates to a relevant biological status so as to motive detection and diagnosis.. The Applicants assert that the amendment adds no new matter and that support for the amendments may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

F. Echelard does not Render the Claims Obvious

In the Office Action of December 29, 2006 the Examiner argues:

"Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to produce variants of MCFD2, as taught by Echerlard." (Office Action of December 29, 2006, page 17).

The Applicants respectfully submit that the claims are non-obvious. However, in order to further the business interests of the Applicants, and while reserving the right to prosecute that original (or similar) claims in the future, the Applicants have amended claim 12 to read "c) diagnosing combined factor 5 and factor 8 deficiency in a subject on the basis of said detecting." Echelard does not teach or suggest diagnosing combined factor 5 and factor 8 deficiency in a subject on the basis of detecting the presence of a variant MCFD2 polypeptide in a biological sample. The Applicants assert that the amendment adds no new matter and that support for the amendments may be found throughout the Specification.

In view of the above, the Applicants respectfully request that this objection be withdrawn.

CONCLUSION

All grounds of rejection of the Office Action dated December 29, 2006, have been addressed, and reconsideration of the application is respectfully requested. It is respectfully submitted that the Applicant's claims should be passed into allowance. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, Applicants encourage the Examiner to call the undersigned collect at (608) 218-6900.

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